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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/066,542	02/05/2002	Osamu Nakamura	740756-2431	5042
22204	7590	05/17/2004	EXAMINER	
NIXON PEABODY, LLP 401 9TH STREET, NW SUITE 900 WASHINGTON, DC 20004-2128			BAUMEISTER, BRADLEY W	
			ART UNIT	PAPER NUMBER
			2815	

DATE MAILED: 05/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/066,542

Applicant(s)

NAKAMURA ET AL.

Examiner

B. William Baumeister

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*AW*

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 04 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) 1,3-6,8-13,15-18,20-23 and 25-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1,3-6,8-13,15-18,20-23 and 25-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>13</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1, 3, 6, 8, 11-13, 18, 20, 23 and 25 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Tanabe et al. '838. See e.g., FIG 13 depicting a channel region having a rare gas component (e.g., He or Ar) with a gradient increasing towards the gate insulating film; and col. 6, lines 31-42 stating that the first inert or rare gas need not be He but merely have a mass number that is smaller than the second inert gas. Regarding the dependent claims (e.g., claim 3), Tanabe expressly states that the TFT may be at least used for an active matrix LCD (col. 1, lines 1-).

***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 4, 5, 9, 10, 16, 17, 21, 22, 26 and 27 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tanabe et al. '838 as applied to the claims above. Regardless of whether Tanabe expressly recites that the TFT may be employed for an EL display (e.g., claim 4) or one of the device applications set forth in claim 5 the other analogous claims, this claim language either constitutes an intended use of the TFT in

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which case the claims are rejected as being anticipated under 35 USC §102, or alternatively if these claims are interpreted to require that the TFT actually be employed in these devices, the claims would be obvious because it was well known to those of ordinary skill in the art at the time of the invention to employ TFT in these particular devices.

*Response to Arguments*

5. Applicant's arguments filed 9/4/2003 have been fully considered but they are not persuasive.

a. Applicant has amended the independent claims to recite only Ne, Ar, Kr and Xe, thereby excluding He. Applicant argues that Tanabe does not anticipate the claims because it does not teach that the inert gas may be one of the above listed ones as an alternative to He. This argument is not persuasive. Tanabe discloses gate insulating films that are formed using two or more kinds of inert or rare gases: (1) a lighter one that is formed towards the bottom of the insulating film and extends into the channel of the TFT; and (2) a heavier inert gas. FIG 13 depicts an embodiment wherein the lighter inert gas is He. However, the scope of the Tanabe disclosure is not limited to this embodiment. Tanabe discloses in relation to the formation of the gate oxide layer that has a rare that, in turn, extends in to the channel layer, "wherein the carrier gas comprises two or more kinds of inert gases, and the inert gas smaller (preferably smallest) in mass number is used at a starting stage of the silicon dioxide film..." See e.g., col. 6, lines 31-42. Restated, Tanabe discloses that He is preferable, but that other ones of the rare gases claimed may be used, so long as the chosen species is relatively lighter than the heavier species. See MPEP 2123 for the propositions that disclosed examples and preferred embodiments do not

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constitute a teaching away from a broader disclose or nonpreferred embodiments, *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971); and a known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use, *In re Gurley*, 27, F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994).

b. Applicant also argues that Tanabe does not teach or suggest the second semiconductor layer contains a rare gas element having a concentration gradient. See e.g., FIG 13 which shows that the semiconductor layer has two regions or sublayers or "layers:" a first layer wherein the rare gas concentration is constant, and a second layer adjacent the oxide wherein the semiconductor has a rare gas concentration with a gradient. As was explained in the preceding paragraph, while this embodiment depicts He as the rare gas, Tanabe's disclosure states that other rare gases may alternatively be employed.

### *Conclusion*

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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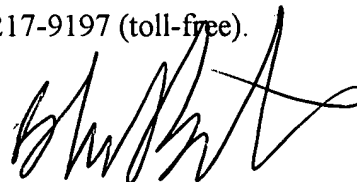
however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to B. William Baumeister whose telephone number is (571) 272-1722. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



B. William Baumeister  
Primary Examiner  
Art Unit 2815

May 14, 2004

**BRADLEY BAUMEISTER  
PRIMARY EXAMINER**